



ecology and environment, inc.

101 YESLER WAY, SEATTLE, WASHINGTON, 98104, TEL. 206/624-9537

International Specialists in the Environment

December 3, 1990

Mr. Neil Thompson
United States Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

RECEIVED

DEC 3 1990

SUPERFUND BRANCH

REF: Work Assignment 68-W9-0200
Quality Assurance/Quality Control Plan for
Colbert Landfill, Colbert, Washington
Dated August 21, 1990

Dear Mr. Thompson:

This letter is an addendum to the final quality assurance/quality control (QA/QC) plan dated August 21, 1990, for the oversight of QC sampling to be conducted by Ecology and Environment, Inc. (E & E) during Landau Associates, Inc. (Landau) groundwater treatment at the Colbert Landfill site. All E & E field operations will be conducted in accordance with this addendum and the referenced QA/QC plan.

Landau has proposed the use of air stripping technology for groundwater treatment at the Colbert Landfill. E & E will perform split sampling of a select representation of Landau's samples to establish accuracy and precision, and provide comparison to the Landau analysis results. The samples will be obtained from the influent water, stripping tower sample points, and effluent water to evaluate efficiency of volatile organic compound (VOC) removal from contaminated groundwater. Groundwater will be pumped from the East System - North Well at a flow rate of 200 gpm to the stripping tower. The air stripper will be operated at three different airflow rates: 1,600, 1,800, and 2,000 cfm. The packed tower to be used by Landau is 40 feet high and includes water sampling ports at each 10-foot section of the column.

E & E will obtain split samples of the influent and effluent streams at the lowest and highest airflow rates and analyze the samples for the United States Environmental Protection Agency (EPA) Target Compound List (TCL). Split samples also will be obtained at 10-, 20-, 30-, and 40-foot sampling ports in relation to the packed tower height. These samples will be analyzed for VOCs only. E & E will obtain four QA samples consisting of three duplicates and one trip blank for analysis. E & E's split sampling effort is summarized in Table 1.

USEPA SF



1414471

Mr. Neil Thompson
December 3, 1990
Page 2

Sample analyses will be performed in accordance with established laboratory analytical methods (Table 2) at a primary CLP or Manchester Laboratory.

Sample custody, calibration, data reduction/QA review, data assessment and corrective action will be performed per the referenced QA/QC plan.

E & E will prepare a data review and validation report. This QA report will be submitted to the EPA Project Officer.

Please review this addendum to the referenced QA/QC plan for the upcoming sampling effort at the Colbert Landfill. Since this sampling effort is scheduled for the week ending December 8, 1990, please provide your comments or written approval as soon as possible. If you have any questions, please contact me at 624-9537.

Sincerely,

ECOLOGY AND ENVIRONMENT, INC.



Lyle Diediker
Project Manager

JM/LD:gam
ZR6030

cc: Sue McCarty, USEPA, Region 10
D.J. Lovelady, USEPA, Region 10
Dennis Robinson, USEPA, Region 10
Joanne Labaw, USEPA, Region 10
Tracy Mann, E & E, Tallahassee

Table 1

SPLIT SAMPLE COLLECTION SUMMARY

Sample Matrix	Sample Location	Packed Tower Airflow Rate	Number of Samples	Sample Container	Sample Analysis (1)	Sample Preservations	Holding Time	Detection Limit	QA Samples
Water	Influent	1,600 cfm	1	(1)	EPA-TCL	(1)	(1)	CLP/RAS CRDL	1 Duplicate
Water	Influent	2,000 cfm	1	(1)	EPA-TCL	(1)	(1)	CLP/RAS CRDL	
Water	Effluent	1,600 cfm	1	(1)	EPA-TCL	(1)	(1)	CLP/RAS CRDL	1 Duplicate
Water	Effluent	2,000 cfm	1	(1)	EPA-TCL	(1)	(1)	CLP/RAS CRDL	
Water	10 ft. Port	1,600 cfm	1	2 40-mL glass vials	VOC	HCl/Ice	14 days	CLP/RAS CRDL	1 Trip Blank
Water	20 ft. Port	2,000 cfm	1	2 40-mL glass vials	VOC	HCl/Ice	14 days	CLP/RAS CRDL	
Water	30 ft. Port	1,800 cfm	1	2 40-mL glass vials	VOC	HCl/Ice	14 days	CLP/RAS CRDL	
Water	40 ft. Port	1,600 cfm	1	2 40-mL glass vials	VOC	HCl/Ice	14 days	CLP/RAS CRDL	1 Duplicate

(1) EPA-TCL Analysis Summary

Analytical Parameters	Sample Containers	Preservative	Holding Time
Metals	1 liter polyethylene bottle with polyethylene-lined caps	HNO ₃ to pH <2	6 months (28 days Hg)
VOA	2 40-mL glass vials	4 drops conc. HCl, maintain at 4°C (±2°)	14 days
Semi-VOA	1 liter amber glass bottle with Teflon-lined cap	Maintain at 4°C (±2°)	Extracted within 7 days, analyzed within 40 days
Pesticides/PCBs	1 liter amber bottle with Teflon-lined cap	Maintain at 4°C (±2°)	Extracted within 7 days, analyzed within 40 days
Cyanide	1 liter polyethylene bottle with polyethylene-lined cap	NaOH to pH <12, maintain at 4°C (±2°)	14 days (without sulfide)

Total split samples is 8 and total QA samples is 4.

Table 2
LABORATORY ANALYTICAL METHODS

Parameter	Matrix	Method Reference	Method Number	Brief Description of Method	Quantitation Limit	Method Accuracy	Method Precision
Volatile Organic Compounds (VOCs)	Water	CLP (1)	RAS	Gas chromatographic separation with mass spectrometric detection (GC/MS)	CRDL (3)	Matrix Spike: 59 to 172 percent Surrogate Recovery: (70 to 121 percent)	21 to 24 percent RPD
Semivolatile Organic Compounds (BNAs)	Water	CLP (1)	RAS	Gas chromatographic separation with mass spectrometric detection (GC/MS)	CRDL (3)	Matrix Spike: 9 to 127 percent Surrogate Recovery: 10 to 141 percent	28 to 50 percent RPD
Pesticides/ Polychlorinated Biphenyl Compounds (PCBs)	Water	CLP (1)	RAS	Dual column gas chromatographic separation with electron capture detection (GC/ECD)	CRDL (3)	Matrix Spike: 38 to 127 percent Surrogate Recovery: 24 to 154 percent	15 to 27 percent RPD
Inorganic Elements Metals	Water	CLP (2)	RAS	Atomic emission, spectrometric detection (ICP) Atomic absorption (AA)	CRDL (3)	Matrix Spike: 75 to 125 percent	±20 percent RPD (values >5 × CRDL) for ICP ±20 percent RSD (values >CRDL) for furnace AA
Cyanide	Water	CLP (2)	RAS	Titrimetric, manual, or semiautomatic spectrophotometric	CRDL (3)	Matrix Spike: 75 to 125 percent	±20 percent RSD (values >CRDL) for furnace AA

- (1) USEPA Contract Laboratory Statement of Work for Organic Analysis (February 1988).
 (2) USEPA Contract Laboratory Statement of Work for Inorganic Analysis (July 1988).
 (3) Contract Required Detection Limit.